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IMAGE

First-degree atrioventricular block and pseudopacemaker syndrome

Bloc atrioventriculaire du premier degré et pseudosyndrome du pacemaker

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An 80-year-old man was referred to our institution for recent dyspnoea on exertion associated with asthenia for a few months. Physical examination, blood tests, chest X-ray and spirometry were normal. An electrocardiogram (Fig. 1A) showed first-degree atrioventricular block (AVB) with a PR interval of 560 ms. Holter monitoring showed that during morning activity (walking), the P waves gradually merged with the QRS complexes. Wenckebach periods appeared as the heart rate exceeded 100 beats/min (Fig. 1B). A transthoracic echocardiogram revealed normal left ventricular systolic function but low cardiac output (3.8 L/min). Doppler tissue imaging at the mitral and tricuspid annulus showed A' waves before the E' waves (Fig. 2A and C). Left and right ventricular filling was compromised because the atria were contracting before the atrioventricular (AV) valves opened (Fig. 2E). We observed reversed blood flow inside the inferior vena cava (IVC), responsible for expansion of the IVC following each right atrial contraction (Fig. 3A). A dual-chamber pacemaker was implanted, with an immediate improvement in both clinical and echocardiographic variables (Fig. 2B, D and F) once the AV delay had been programmed at 200 ms (Fig. 1C). Right and left ventricular filling improved once AV synchrony was restored. At follow-up, 6 months after the procedure, the patient was free of symptoms. Pacemaker implantation is a class IIa recommendation for marked first-degree AVB responsible for haemodynamic compromise due to loss of AV synchrony.

Abbreviations: AV, atrioventricular; AVB, atrioventricular block; IVC, inferior vena cava.

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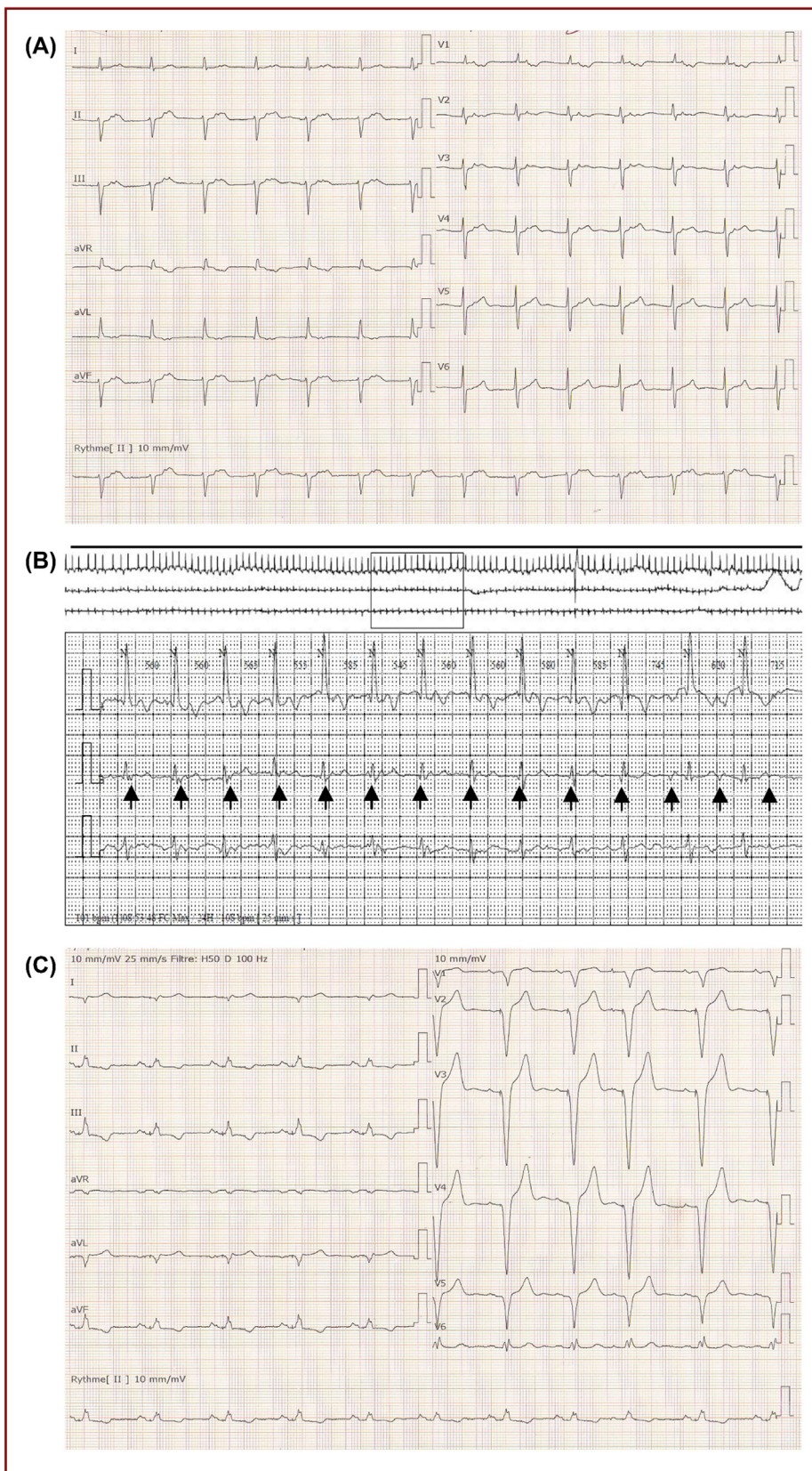


Figure 1. A. Twelve-lead surface electrocardiogram showed first-degree atrioventricular block (positive P waves in the preceding T waves). B. Electrocardiogram strip from Holter monitoring showing that during walking at 8:53 a.m., P waves gradually merged with the preceding QRS complexes and Wenckebach periods appeared beyond 100 beats/min; arrows show the P waves. C. Stimulated surface electrocardiogram with a PR interval programmed at 200 ms.

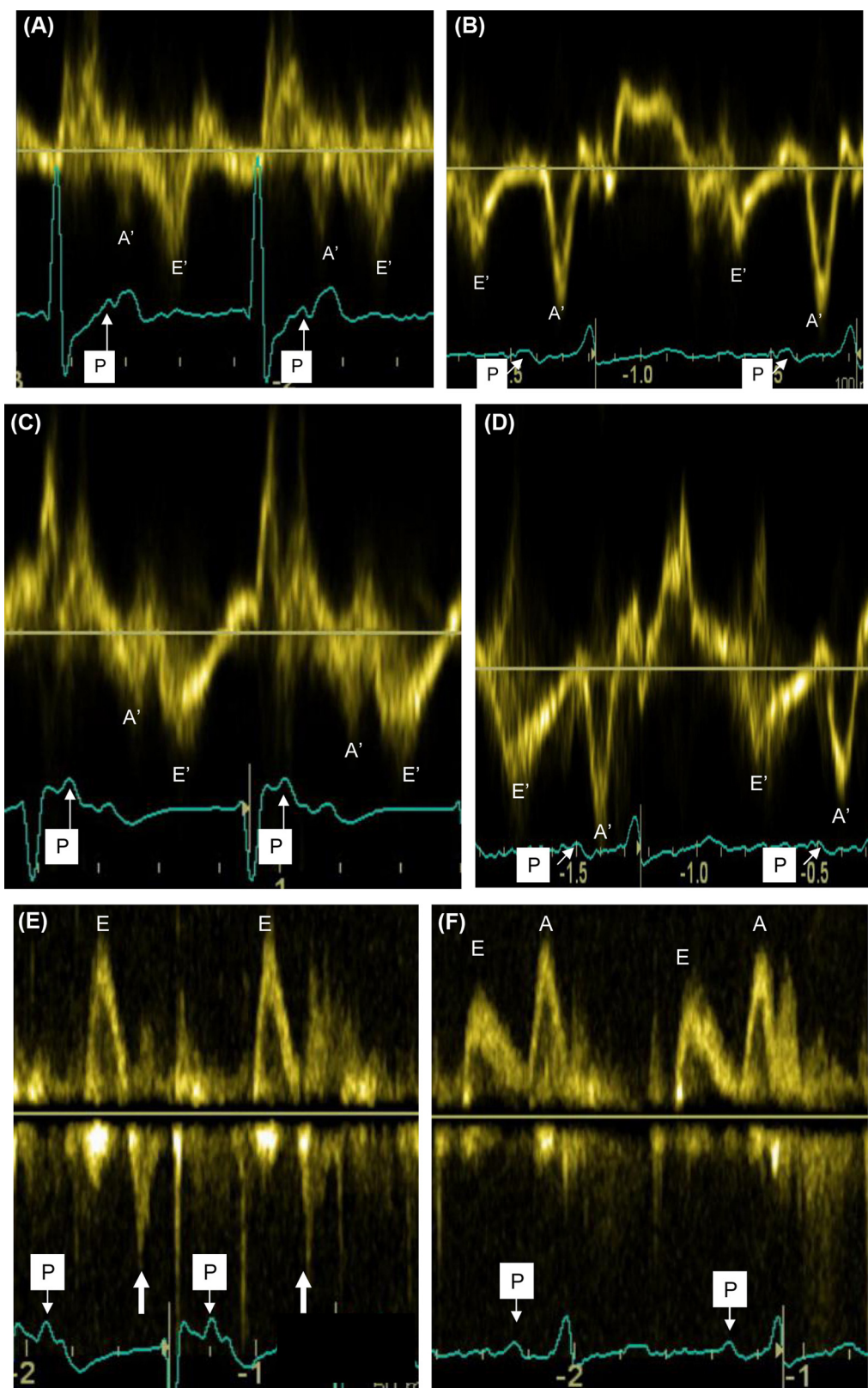


Figure 2. A. Doppler tissue imaging (DTI) at baseline at the mitral annulus showed A' waves before the E' waves; left ventricular filling was therefore compromised. B. DTI after a normal atrioventricular (AV) delay was programmed; the normal left E'-A' sequence was restored. C. DTI at baseline at the tricuspid annulus showed A' waves before the E' waves; right ventricular filling was therefore compromised. D. DTI after a normal AV delay was programmed; the normal right E'-A' sequence was restored. E. Doppler mitral inflow at baseline showed no A wave; the left atrium was contracting before the mitral valve opened; arrows show mitral regurgitation during the diastolic phase. F. Doppler mitral inflow after a normal AV delay was programmed; A waves were restored.

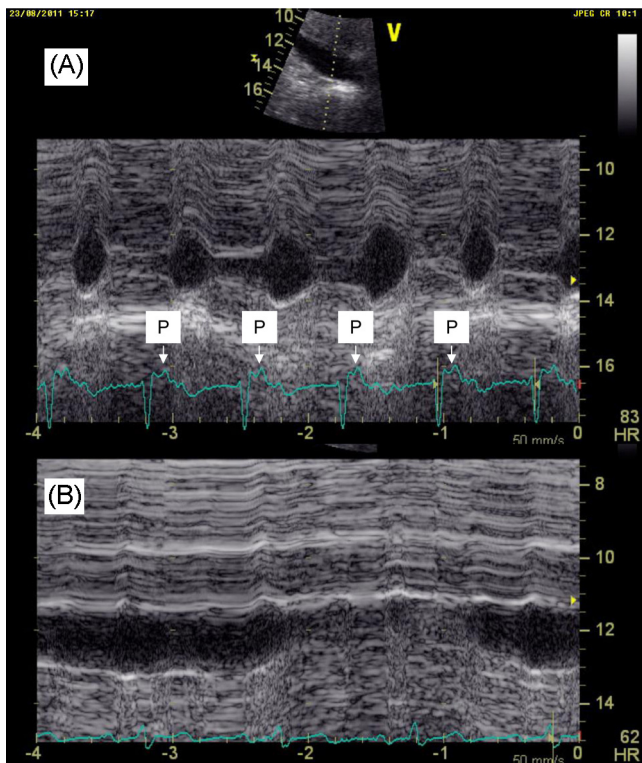


Figure 3. A. M mode study at the inferior vena cava at baseline showed inferior vena cava expansion following each right atrial contraction. B. Normal M mode study after a normal atrioventricular delay was programmed.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.